

This listing of claims will replace the originally filed claims in the application.

Listing of Claims

Claims 1-8 (canceled)

Claim 9 (new): A method for producing silicon nitride films by thermal chemical vapor deposition comprising:

- i) feeding a trisilylamine gas and an ammonia gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming a silicon nitride film on a substrate by reacting said gases under predetermined temperature and pressure conditions; and
- iii) providing a flow rate ratio between said ammonia gas to said trisilylamine gas fed in said reaction chamber equal to or greater than about 10.

Claim 10 (new): The method according to Claim 9, wherein the predetermined temperature conditions for the reaction between said trisilylamine and said ammonia gas is set at a temperature which is equal to or lower than about 600°C.

Claim 11 (new): A method for producing silicon nitride films by thermal chemical vapor deposition comprising:

- i) feeding a trisilylamine gas and an ammonia gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming a silicon nitride film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions; and
- iii) setting the predetermined temperature of the reaction between said trisilylamine and said ammonia gas at a value equal to or lower than 600°C.

Claim 12 (new): A method for producing silicon oxynitride films by thermal chemical vapor deposition comprising:

- i) feeding a trisilylamine gas, an ammonia gas, and an oxygen-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming a silicon oxynitride film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 13 (new): The method according to Claim 12, wherein said oxygen-containing gas is at least one component selected from the group consisting of: O₂, O₃, H₂O, H₂O₂, NO, NO₂, and N₂O.

Claim 14 (new): A method for producing silicon oxynitride films by thermal chemical vapor deposition, comprising:

- i) feeding a trisilylamine gas and at least one additional gas containing both oxygen and nitrogen into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming a silicon oxynitride film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 15 (new): The method according to Claim 14, wherein said oxygen and nitrogen gas is at least one component selected from the group consisting of NO, NO₂, and N₂O.

Claim 16 (new): The method according to Claim 9, wherein said flow rate ratio is greater than about 20.

Claim 17 (new): A method for producing silicon nitride films by thermal chemical vapor deposition comprising:

- i) feeding at least one trisilylamine gas and at least one ammonia gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming at least one silicon nitride film on a substrate by reacting said gases under predetermined temperature and pressure conditions; and

- iii) providing a flow rate ratio between at least one said ammonia gas to at least one said trisilylamine gas fed in said reaction chamber equal to or greater than about 10.

Claim 18 (new): The method according to Claim 17, wherein the predetermined temperature conditions for the reaction between at least one said trisilylamine and at least one said ammonia gas is set at a temperature which is equal to or lower than about 600°C.

Claim 19 (new): A method for producing silicon nitride films by thermal chemical vapor deposition comprising:

- i) feeding at least one trisilylamine gas and at least one ammonia gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming at least one silicon nitride film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions; and
- iii) setting the predetermined temperature of the reaction between at least one said trisilylamine and at least one said ammonia gas at a value equal to or lower than 600°C.

Claim 20 (new): A method for producing silicon oxynitride films by thermal chemical vapor deposition comprising:

- i) feeding at least one trisilylamine gas, at least one ammonia gas, and at least one oxygen-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming at least one silicon oxynitride film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 21 (new): The method according to Claim 20, wherein said oxygen-containing gas is at least one component selected from the group consisting of: O₂, O₃, H₂O, H₂O₂, NO, NO₂, and N₂O.

Claim 22 (new): A method for producing silicon oxynitride films by thermal chemical vapor deposition, comprising:

- i) feeding at least one trisilylamine gas and at least one additional gas containing both oxygen and nitrogen into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming at least one silicon oxynitride film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 23 (new): The method according to Claim 22, wherein said oxygen and nitrogen gas is at least one component selected from the group consisting of NO, NO₂, and N₂O.

Claim 24 (new): The method according to Claim 17, wherein said flow rate ratio is greater than about 20.

Claim 25 (new): A method for producing silicon nitride-containing films by thermal chemical vapor deposition comprising:

- i) feeding a trisilylamine-containing gas and an ammonia-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming a silicon nitride-containing film on a substrate by reacting said gases under predetermined temperature and pressure conditions; and
- iii) providing a flow rate ratio between an ammonia-containing gas to a trisilylamine-containing gas fed in said reaction chamber equal to or greater than about 10.

Claim 26 (new): The method according to Claim 25, wherein the predetermined temperature conditions for the reaction between a trisilylamine-containing gas and an ammonia-containing gas is set at a temperature which is equal to or lower than about 600°C.

Claim 27 (new): A method for producing silicon nitride-containing films by thermal chemical vapor deposition comprising:

- i) feeding a trisilylamine-containing gas and an ammonia-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming a silicon nitride-containing film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions; and
- iii) setting the predetermined temperature of the reaction between a trisilylamine-containing gas and an ammonia-containing gas at a value equal to or lower than 600°C.

Claim 28 (new): A method for producing silicon oxynitride-containing film by thermal chemical vapor deposition comprising:

- i) feeding a trisilylamine-containing gas, an ammonia-containing gas, and an oxygen-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming a silicon oxynitride-containing film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 29 (new): The method according to Claim 28, wherein said oxygen-containing gas is at least one component selected from the group consisting of: O₂, O₃, H₂O, H₂O₂, NO, NO₂, and N₂O.

Claim 30 (new): A method for producing silicon oxynitride-containing films by thermal chemical vapor deposition, comprising:

- i) feeding a trisilylamine-containing gas and at least one additional gas containing both oxygen and nitrogen into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming a silicon oxynitride-containing film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 31 (new): The method according to Claim 30, wherein said oxygen-containing and nitrogen-containing gas is at least one component selected from the group consisting of NO, NO₂, and N₂O.

Claim 32 (new): The method according to Claim 25, wherein said flow rate ratio is greater than about 20.

Claim 33 (new): A method for producing silicon nitride-containing films by thermal chemical vapor deposition comprising:

- i) feeding at least one trisilylamine-containing gas and at least one ammonia-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming at least one silicon nitride-containing film on a substrate by reacting said gases under predetermined temperature and pressure conditions; and
- iii) providing a flow rate ratio between at least one ammonia-containing gas to at least one trisilylamine-containing gas fed in said reaction chamber equal to or greater than about 10.

Claim 34 (new): The method according to Claim 33, wherein the predetermined temperature conditions for the reaction between at least one trisilylamine-containing gas and at least one ammonia-containing gas is set at a temperature which is equal to or lower than about 600°C.

Claim 35 (new): A method for producing silicon nitride-containing films by thermal chemical vapor deposition comprising:

- i) feeding at least one trisilylamine-containing gas and at least one ammonia-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate;
- ii) forming at least one silicon nitride-containing film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions; and

- iii) setting the predetermined temperature of the reaction between at least one trisilylamine-containing gas and at least one ammonia-containing gas at a value equal to or lower than 600°C.

Claim 36 (new): A method for producing silicon oxynitride-containing films by thermal chemical vapor deposition comprising:

- i) feeding at least one trisilylamine-containing gas, at least one ammonia-containing gas, and at least one oxygen-containing gas into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming at least one silicon oxynitride-containing film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 37 (new): The method according to Claim 36, wherein said oxygen-containing gas is at least one component selected from the group consisting of: O₂, O₃, H₂O, H₂O₂, NO, NO₂, and N₂O.

Claim 38 (new): A method for producing silicon oxynitride-containing films by thermal chemical vapor deposition, comprising:

- i) feeding at least one trisilylamine-containing gas and at least one additional gas containing both oxygen and nitrogen into a chemical vapor deposition reaction chamber that contains at least one substrate; and
- ii) forming at least one silicon oxynitride-containing film on at least one substrate by reacting said gases under predetermined temperature and pressure conditions.

Claim 39 (new): The method according to Claim 38, wherein said oxygen-containing and nitrogen-containing gas is at least one component selected from the group consisting of NO, NO₂, and N₂O.

Claim 40 (new): The method according to Claim 33, wherein said flow rate ratio is greater than about 20.